

美国经济分析

衡量通胀的最佳方式是什么？(摘要)

- 我们如何衡量通胀在当前意义重大。通胀趋势的指标差异显著：截尾平均PCE低至2.2%而核心PCE高达3.3%；究竟是仅看表面数据，还是剔除关税、伊朗战争和统计测量误差的影响，都会带来很大的不同。美联储主席沃什曾表示，他正在审视比PCE更广泛的通胀数据；他新任命的个工作组将重新评估美联储的通胀框架。
- 衡量通胀的最佳方式取决于具体目标。价格指数旨在衡量消费者支付的价格，或者像PCE指数一样，用作GDP统计中消费项的平减指数。央行的目标可能是捕捉潜在通胀趋势以及公众所感知到的通胀率，后者可能影响通胀预期的形成。
- 这些目标可能彼此冲突。例如，美联储看重的PCE在指标设计上必然包含一些消费者不直接支付或不太了解的价格，因此它们不太可能影响通胀预期。PCE的类别权重基于支出占比，这意味着部分动向特异的类别被赋予了很高权重。
- 我们构建了一个通胀衡量指标，根据类别对潜在通胀趋势和通胀预期的相关性进行加权，以便更好服务于央行的目标。我们采用的统计技术默认使用PCE权重，但如有确凿证据显示某个类别对于上述目标的适配度极好或极差，那么我们将相应调整权重。这意味着我们应该上调食品和租金的权重，下调能源和汽车的权重。在通胀飙升期间，我们调整后的指标在2022年高于核心PCE，但在2023年年中则略微偏低。
- 为了增进见解，我们还分析了外国央行的做法和经济研究。我们从这两类研究中得到的重要启示是，结合使用多种通胀衡量指标颇具优势，既是因为不同衡量指标可能是不同情况下的最优选，也因为组合预测在统计学上往往具备更佳的未来通胀预测能力。
- 我们得出了两项结论，可供美联储参考。首先，对几种可靠的衡量指标（例如我们为央行设计的通胀衡量指标以及核心、截尾平均值、中值和多元核心趋势等常见指标）求平均值是一个很好的切入点。过去一年这些指标的平均值为2.9%。其次，无论采取哪种统计方法，都不能免除评估当前整体宏观环境如何影响通胀，并在必要时对数据进行判断调整的必要性。
- 考虑到上述两点，我们形成了更偏温和的通胀观点。在几项正在消退的一次性因素对通胀数据产生重大冲击之际，我们认为理应弱化它们的影响，减去其影响估值或剔除离群类别的做法均可。无论哪种方法都表明，我们距离2%的通胀目标并没有核心PCE通胀数据看上去那么遥远。

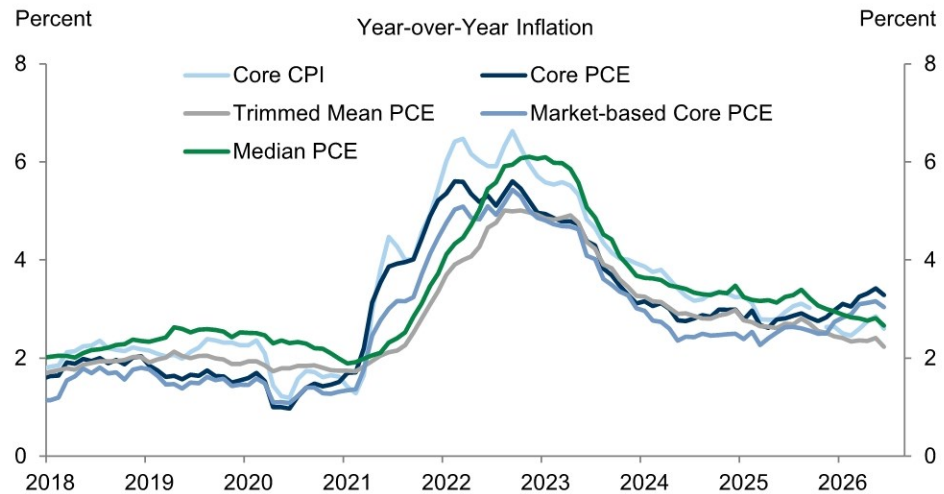
Pierfrancesco Mei
+1(212)902-8809 |
pierfrancesco.mei@gs.com
高盛集团

David Mericle
+1(212)357-2619 |
david.mericle@gs.com
高盛集团

What Is the Best Way to Measure Inflation?

How we measure inflation matters quite a bit at the moment. The trimmed mean PCE measure rose just 2.2% over the last year, while the core PCE measure rose 3.3% (Exhibit 1). Whether one takes the data at face value or removes an estimate of the effects of tariffs, the oil spike and other effects of the war with Iran, and statistical mismeasurement makes a large difference too.

图表 1: Which Measure of Inflation One Chooses Matters a Lot at the Moment Because Measures of the Trend Vary Widely, from 2.2% for Trimmed Mean PCE to 3.3% for Core PCE



资料来源：高盛全球投资研究部, Department of Labor, Department of Commerce, 美联储

There is already a wide range of measures available that seek to get at the underlying inflation trend (Exhibit 2). The core simply drops the volatile food and energy categories, while the trimmed mean removes outlier categories, the median looks at the 50th percentile inflation rate across categories, the cyclical core focuses on categories that reliably comove with the business cycle, and the multivariate core trend extracts a common trend both across categories and over time.

图表 2: A Variety of Inflation Measures Try to Capture the Underlying Trend in Different Ways

Alternative Inflation Measures		
Measure	Latest YoY rate (%)	Description
CPI	3.5	Measures the change in prices paid by urban consumers for a market basket of goods and services.
Core CPI	2.6	Excludes the volatile food and energy categories.
Chained CPI	3.4	Adjusts expenditure weights each month to account for consumer substitution toward cheaper goods. The final version is released with a longer lag.
Sticky Price CPI	2.8	Includes the CPI categories whose prices are less flexible and adjust less frequently in order to capture deliberate price changes chosen by businesses.
PCE	3.7	Includes all goods and services that count as consumer spending in the GDP statistics. Expenditure weights are updated monthly to account for substitution.
Core PCE	3.3	Excludes the volatile food and energy categories.
Market-based Core PCE	3.0	Excludes goods and services whose prices are estimated by the statistical agency rather than observed directly.
Dallas Fed Trimmed Mean PCE	2.2	Excludes the categories that account for the top 31% and bottom 24% weight of the index ranked by their monthly inflation rates.
Cleveland Fed Median PCE	2.7	The rate of change of the category in the 50th percentile of categories sorted by their inflation rates and weighted by their index weights.
San Francisco Fed Cyclical Core PCE	3.2	Includes the categories most sensitive to cyclical conditions.
New York Fed Multivariate Core Trend	3.0	Trend inflation rate from a dynamic factor model that estimates a common statistical trend both across categories and over time.

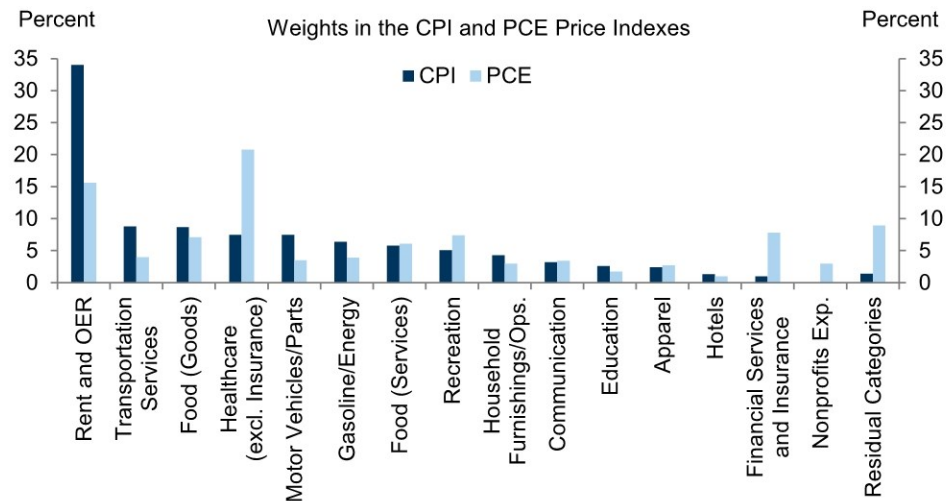
资料来源：高盛全球投资研究部, Department of Labor, Department of Commerce, 美联储

Chairman Warsh said last week that he is “looking at a broader set of inflation data than PCE” to try to assess “the underlying generalized change in prices.” One of his new task forces will focus on inflation and could consider different ways of measuring it.

The Best Way to Measure Inflation Depends on What the Goal Is

The best way to measure inflation depends on the goal. A price index might aim to capture the prices paid by consumers, like the CPI. Or it might be designed to serve as a deflator for everything treated as consumption in the GDP statistics, like the PCE index. Different approaches can result in differences in scope and category weights (Exhibit 3).

图表 3: The CPI and PCE Put Substantially Different Weights on Price Categories, Reflecting Differences in Their Goals and Design



资料来源：高盛全球投资研究部, Department of Labor, Department of Commerce

A central bank's goals might instead be to capture both the underlying inflation trend and the rate perceived by the public that shapes their inflation expectations.

When the Fed switched to the PCE index, it highlighted three advantages over the CPI: it adjusts expenditure weights monthly to account for consumer substitution toward cheaper goods; it can be revised with more accurate data; and it measures household expenditures more comprehensively.¹

But the PCE index is designed for an entirely different purpose that can at times conflict with a central bank's goals. First, weighting by expenditure shares can mean putting substantial weight on components whose prices move idiosyncratically with little connection to the underlying trend. Second, because the PCE index covers everything that counts as consumption in the GDP statistics, it must include prices that consumers do not pay directly or might not be aware of and that are therefore less likely to shape their inflation perceptions and expectations. Examples include employer-paid healthcare, nonprofit expenditures, and certain financial services fees, many of which are excluded from the market-based PCE index (Exhibit 4, left).² The obligation to include these items can have other undesirable effects, such as the notoriously large impact of stock market fluctuations on PCE inflation (Exhibit 4, right).³

Even something as seemingly obvious as adjusting prices for quality could in some circumstances conflict with a central bank's goal of capturing the perceptions that

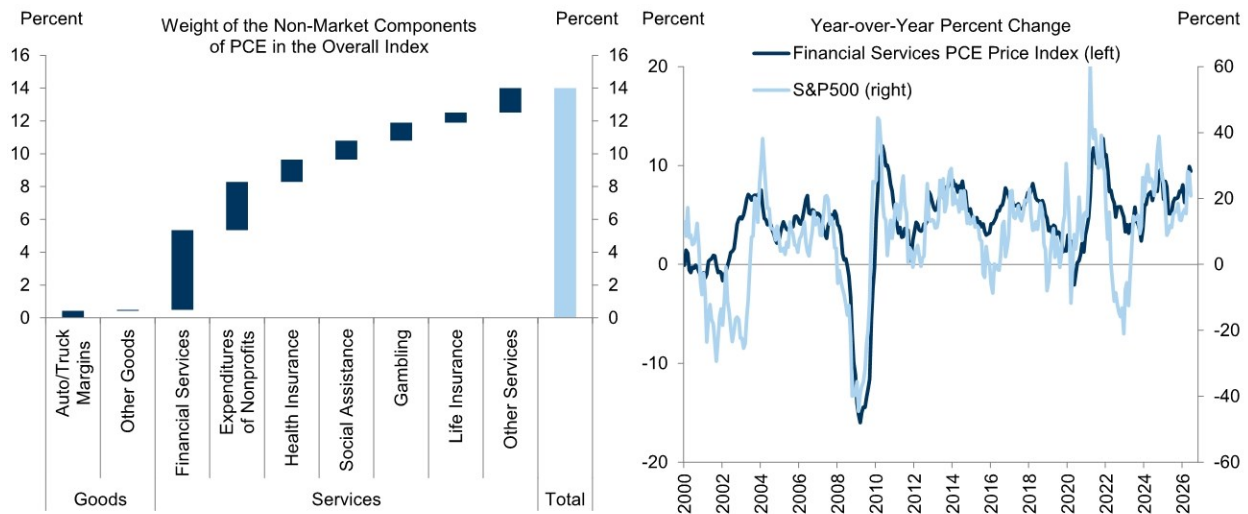
¹ Federal Reserve, Monetary Policy Report, February 17, 2000. See footnote 1 on page 4.

² The market-based measure excludes prices that are estimated rather than observed by the statistical agency. These categories overlap with but are not exactly the same as prices not paid directly by consumers.

³ Because consumers do pay nominal fees that are a percentage of their assets and therefore rise with stock prices, the GDP statistics must treat an increase in these fees as an increase in either the price or quantity of financial services. Treating it as an increase in prices, the current approach, can cause large swings in PCE inflation, while treating it as an increase in quantities could cause similarly dubious swings in GDP growth.

shape inflation expectations. For example, consumers are likely to perceive sticker price increases for cell phones or televisions as inflation, but the official statistics record that these items experience deflation most years after adjusting for improvements in product quality. Insurance prices highlight a separate but related issue. If the risk pool of health insurance customers deteriorates, driving up insurers' per-customer costs and leading them to raise prices commensurately, consumers would surely perceive this as inflation, but the official statistics would treat it as no change in the price of the service provided by the insurer since it merely covers cost increases driven by higher average per-person health care consumption.

图表 4: Because the PCE Index Is Intended to Serve as a Deflator for Everything That Counts as Consumption in the GDP Statistics, It Is Obligated to Include Prices That Consumers Do Not Pay Directly, That They Might Not Be Aware of, or That Have Unwanted Features Like Fluctuating with the Stock Market



资料来源：高盛全球投资研究部, Department of Commerce, S&P

Designing an Inflation Measure for a Central Bank's Goals

Economists Greg Mankiw—a leader of the Fed's task force on inflation—and Ricardo Reis have similarly argued that “a price index designed to measure the cost of living is not necessarily the best one to serve as a target for a monetary authority.” An ideal index for a central bank, they argue, should consider “the cyclical sensitivity of each sector, the proclivity of each sector to experience idiosyncratic shocks, and the speed with which the prices in each sector respond to changing conditions.”⁴ We follow their lead in designing an inflation measure for a central bank, though we are more conservative about departing too much from the official index because we think central bankers likely would be as well.

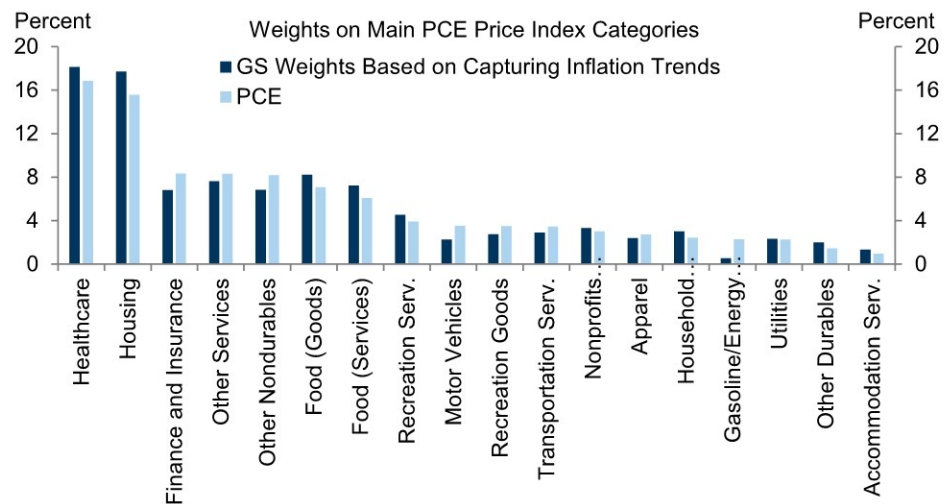
Specifically, we construct an inflation measure that overweights or underweights the 18 top-level PCE categories according to their relevance for (1) the underlying trend and (2) inflation expectations. We use LASSO estimation, which takes PCE weights as its starting point and adjusts them only where there is robust statistical evidence that a category serves these two goals particularly well or poorly. We estimate the

⁴ Mankiw and Reis (2003), “What Measure of Inflation Should a Central Bank Target?” Journal of the European Economic Association.

weights over rolling 25-year windows and show the latest estimates in the charts below.

We first estimate how relevant each category is for capturing the underlying inflation trend. We evaluate categories in three ways—how well they predict year-ahead headline inflation, how correlated they are with cyclical cost pressures captured by the unemployment rate, and how strongly they comove with other categories based on a principal component analysis—and then average the resulting weights. Exhibit 5 compares the category weights implied by this goal of capturing the underlying inflation trend with the official expenditure weights.

图表 5: A Central Bank's Ideal Inflation Measure Would Capture the Underlying Inflation Trend, Which Means Overweighting Categories Like Housing and Underweighting Categories Like Energy Goods

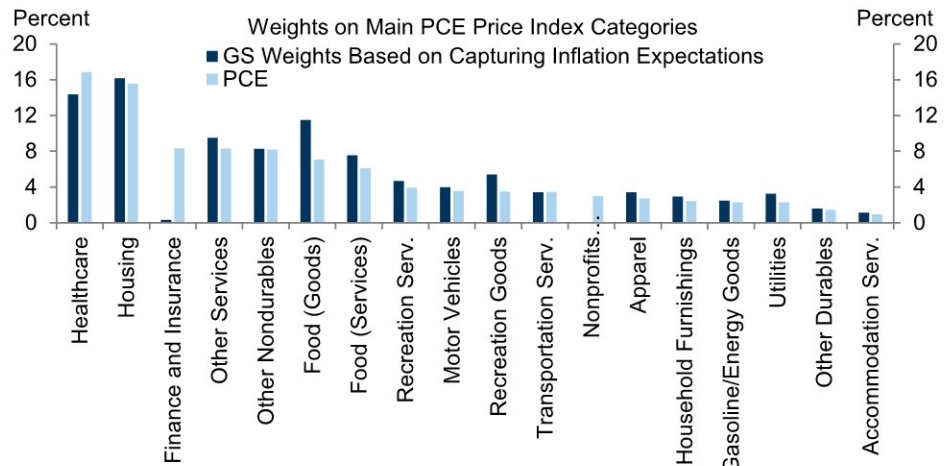


资料来源：高盛全球投资研究部, Department of Commerce

We then assess how relevant each category is for inflation expectations. Here we estimate the combination of category weights that best explains one- and five-year Michigan consumer expectations and our tracker of business inflation expectations, again averaging the three resulting sets of weights. Because prices that consumers cannot observe are unlikely to shape their expectations, we drop the financial services, nonprofits, and health care categories that are excluded from market-based PCE.⁵ Exhibit 6 compares the weights implied by relevance for inflation expectations with the official weights.

⁵ One could drop OER on the same grounds or seek to measure it in a way that better approximates the costs that homeowners incur, as some other countries do. We retain it here because removing it would be a substantial departure from existing practice and because housing rents are very relevant to both of the central bank goals.

图表 6: A Central Bank's Ideal Inflation Measure Would Also Capture the Inflation Rate Perceived by the Public That Affects Inflation Expectations, Which Means Overweighting Food and Underweighting Categories Where Consumers Do Not Pay Directly or Are Less Aware of the Price

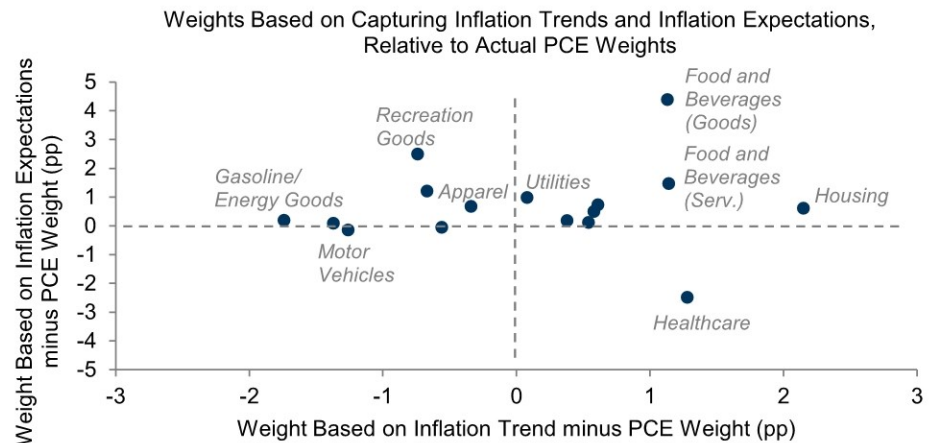


Note: We compute our weights by excluding the non-market PCE categories for which prices are imputed.

资料来源：高盛全球投资研究部, Department of Commerce

How sensible are these adjustments to category weights? Exhibit 7 summarizes our results above, which suggest that an ideal inflation measure for a central bank's goals should overweight food and rent and underweight energy and cars. Research by Cleveland Fed economists and others similarly finds that prices of items like food that consumers see more often are especially relevant for expectations.⁶

图表 7: We Adjust Category Weights Based on Relevance for the Inflation Trend or Inflation Expectations



Note: Because we assume that non-market based categories (not shown) do not influence inflation expectations, the adjustments for relevance to inflation expectations in the remaining categories sum to more than zero.

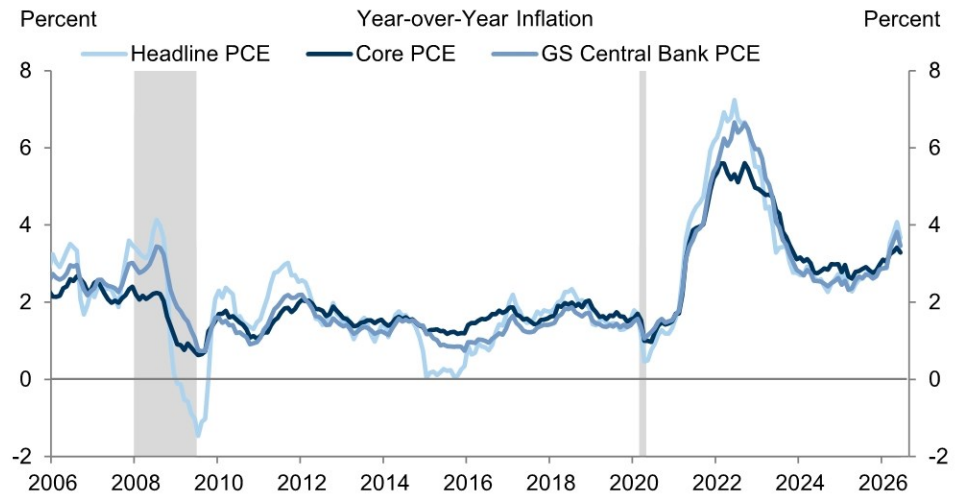
资料来源：高盛全球投资研究部, Department of Commerce

We average the weights implied by the two goals—relevance for the underlying inflation trend and relevance for inflation expectations—to construct our Central Bank PCE inflation measure. Exhibit 8 shows that it is more volatile than the core

⁶ Campos, McMain and Pedemonte (2022), “Understanding Which Prices Affect Inflation Expectations,” Cleveland Fed Economic Commentary; D’Acunto, Malmendier and Weber (2023), “What Do the Data Tell Us About Inflation Expectations?,” Handbook of Economic Expectations.

because it retains some weight on food and energy but less volatile than the headline because it underweights energy and categories that move idiosyncratically. During the pandemic inflation surge, it ran above core PCE in 2022 before falling somewhat below it by mid-2023. Currently, it stands at 3.4% year over year, close to core PCE at 3.3%.

图表 8: Our Central Bank PCE Measure That Weights Categories in Part by Their Relevance for the Underlying Inflation Trend and Inflation Expectations Was More Concerning in 2022 but Less by Mid-2023



资料来源：高盛全球投资研究部, Department of Commerce

Insights from Foreign Central Banks and New Economic Research: A Range of Measures for a Range of Circumstances

For further guidance on designing an ideal inflation measure for the Fed, we look at foreign central bank practices and recent economic research.

A comparison with foreign central bank practices highlights three points. First, most other central banks target CPIs because monthly equivalents of PCE are not available, which makes concerns about including prices that consumers do not pay less relevant. Second, countries estimate owners' equivalent rent in a variety of ways: some exclude it, some use the US approach of estimating it with rent data, and some use a user cost model that better reflects the costs that homeowners pay.⁷ Third, the Bank of Canada monitors two preferred measures of inflation, a trimmed measure and a median measure. It previously also monitored a common trend measure estimated with a factor model that also uses category-level price data but stopped because its real-time performance was unreliable, though recent staff research has proposed a similar but less revision-prone alternative.⁸

We also draw two lessons from recent economic research. First, Mark Watson finds that multivariate time series models that also use category-level price data—the

⁷ While this approach might better capture price changes that consumers feel, it is not without disadvantages. See Daan Struyven, "OER: The Worst Measure, Except for All the Others," US Daily, August 10, 2017.

⁸ Luis Uzeda (2025), "Pulse Check: Measuring Underlying Inflation and Its Drivers," Bank of Canada Staff Analytical Notes.

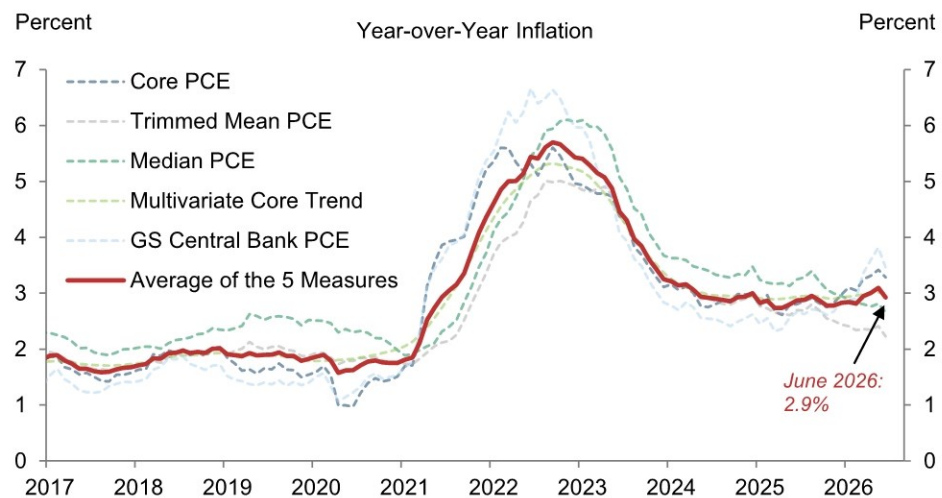
approach of the New York Fed’s multivariate core trend measure and the Bank of Canada models noted above—perform well in distinguishing persistent trends from transitory shocks.⁹ Second, Jonathan Wright finds that an average of many inflation measures that aim to capture the underlying trend outperforms any single measure in forecasting future inflation.¹⁰

A common takeaway is that using a combination of measures of inflation can be advantageous, both because different measures can be optimal in different circumstances and because combinations of forecasts tend to outperform statistically in forecasting future inflation.

An Inflation Framework for the Fed

We draw two conclusions for the Fed. First, using an average of several sensible measures—such as our inflation measure designed for a central bank and other familiar measures such as the core, trimmed mean, median, and multivariate common trend—could be a good starting point. Exhibit 9 shows that on average those five measures rose 2.9% over the last year. (Some of these measures have run at a slightly different average pace than the core PCE measure, and their average has run 0.1-0.2pp higher since 2000.)

图表 9: Averaging Across Several Measures of the Inflation Trend Can Be Advantageous; The Average Year-over-Year Rate Across Our Central Bank Measure and Four Familiar Measures Is Currently 2.9%



资料来源：高盛全球投资研究部, Department of Commerce, 美联储

Second, no purely statistical approach can fully eliminate the need to consider how the broader macroeconomic context is currently affecting inflation and to make judgmental adjustments to the data when warranted. As we noted recently, whether trimming makes sense at a particular time is partly a judgment call about whether the current outliers were caused mostly by sampling noise or by some major development, and in the latter case about how transitory that development is likely

⁹ Mark Watson (2026), “Forecasting the Covid Surge in Inflation,” NBER Working Paper.

¹⁰ Jonathan Wright (2026), “What is Core Inflation?” Journal of Monetary Economics. Our LASSO estimates described in the previous section are partially based on Wright’s approach.

to be. The trimmed mean measure handles the challenges of the moment—tariffs, war-driven energy cost spikes, and mismeasurement of AI effects—quite well, but not all of the measures handle the current challenges well, and the trimmed mean has not handled all past challenges like the pandemic well. Forecasters who understand the impact of factors ranging from methodological changes to policy distortions to catch-up inflation will often be able to improve on purely statistical measures, though they must be careful not to let confirmation bias influence the adjustments they make.

Our more benign inflation view rests in part on these two points. At a time when several fading one-off factors are having a large impact on the inflation data, we think that it makes sense to downplay their effects, either by subtracting an estimate of their impact or by trimming outlier categories. Either approach suggests that the 2% target is not as far away as core PCE inflation suggests.

Pierfrancesco Mei

David Mericle

The US Economic and Financial Outlook

(% change on previous period, annualized, except where noted)

	2023	2024	2025	2026	2027	2025 Q4	Q1	2026 Q2	Q3	Q4	Q1	2027 Q2	Q3	Q4
OUTPUT AND SPENDING														
Real GDP	2.9	2.8	2.1	2.1	2.3	0.5	2.1	1.5	2.7	2.2	2.2	2.3	2.3	2.3
Real GDP (annual=Q4/Q4, quarterly=yoy)	3.4	2.4	2.0	2.1	2.3	2.0	2.7	2.1	1.7	2.1	2.1	2.3	2.2	2.3
Consumer Expenditures	2.6	2.9	2.6	2.0	1.9	1.9	0.5	3.2	1.6	1.5	1.9	2.0	2.1	2.2
Residential Fixed Investment	-7.8	3.2	-2.2	-3.5	1.3	-1.7	-7.8	1.5	-2.5	1.5	2.0	2.0	2.0	2.3
Business Fixed Investment	7.3	2.9	4.1	6.9	5.9	2.4	10.6	8.4	8.1	6.9	4.9	4.9	4.9	4.9
Structures	16.7	1.1	-5.3	-4.0	2.3	-6.6	-4.7	-5.0	4.0	-0.2	3.5	3.5	3.5	3.5
Equipment	2.9	3.5	8.3	10.6	7.0	4.3	15.8	15.2	10.2	9.5	5.0	5.0	5.0	5.0
Intellectual Property Products	6.2	3.5	5.6	9.2	6.4	5.4	13.8	8.8	8.0	7.8	5.5	5.5	5.5	5.5
Federal Government	3.3	3.8	-1.2	-2.1	0.3	-16.7	9.4	-4.1	-2.0	1.0	1.0	1.0	1.0	1.0
State & Local Government	3.6	3.8	2.5	1.5	1.0	1.5	1.6	1.1	0.7	1.0	1.0	1.0	1.0	1.0
Net Exports (\$bn, '17)	-925	-1,033	-1,091	-1,078	-1,167	-969	-1,002	-1,075	-1,107	-1,128	-1,144	-1,159	-1,175	-1,190
Inventory Investment (\$bn, '17)	47	44	29	-5	54	-16	-17	-51	17	30	40	50	60	65
Nominal GDP	6.7	5.3	5.0	5.9	4.9	4.2	5.8	7.9	4.5	4.4	4.9	4.8	4.7	4.5
Industrial Production, Mfg.	-1.0	-1.0	0.8	1.8	3.8	-3.5	1.4	4.8	4.6	4.1	3.5	3.4	3.4	3.4
HOUSING MARKET														
Housing Starts (units, thous)	1,421	1,370	1,356	1,347	1,372	1,323	1,418	1,299	1,323	1,348	1,362	1,365	1,375	1,385
New Home Sales (units, thous)	666	684	679	630	649	711	622	590	649	661	636	642	649	670
Existing Home Sales (units, thous)	4,103	4,067	4,076	4,168	4,255	4,157	4,053	4,160	4,226	4,234	4,243	4,251	4,260	4,268
Case-Shiller Home Prices (%yoy)*	5.3	3.8	1.3	1.1	2.4	1.3	0.8	1.1	1.6	1.1	1.1	2.0	2.2	2.4
INFLATION (% ch, yr/yr)														
Consumer Price Index (CPI)**	3.3	2.9	2.7	3.1	1.9	2.7	2.7	3.8	3.4	3.2	2.8	1.8	2.0	2.0
Core CPI **	3.9	3.2	2.6	2.3	1.9	2.7	2.5	2.7	2.3	2.4	2.1	1.9	1.9	1.9
Core PCE** †	3.1	3.0	3.0	2.9	2.2	2.9	3.1	3.3	3.1	3.0	2.5	2.2	2.3	2.2
LABOR MARKET														
Unemployment Rate (%)^	3.8	4.1	4.4	4.4	4.3	4.4	4.3	4.2	4.3	4.4	4.4	4.3	4.3	4.3
U6 Underemployment Rate (%)^	7.2	7.6	8.4	8.3	8.2	8.4	8.0	7.9	8.2	8.3	8.2	8.2	8.2	8.2
Payrolls (thous, monthly rate)	210	122	10	67	50	-39	73	111	40	45	50	50	50	50
Employment-Population Ratio (%)^	60.1	59.9	59.7	59.0	59.0	59.7	59.2	59.0	59.1	59.0	59.0	59.0	59.0	59.0
Labor Force Participation Rate (%)^	62.5	62.5	62.4	61.7	61.6	62.4	61.9	61.5	61.8	61.7	61.7	61.7	61.7	61.6
Average Hourly Earnings (%yoy)	4.4	3.9	4.0	3.9	3.8	4.0	4.0	4.0	3.9	3.8	3.8	3.8	3.8	3.8
GOVERNMENT FINANCE														
Federal Budget (FY, \$bn)	-1,694	-1,833	-1,775	-2,100	-2,100	--	--	--	--	--	--	--	--	--
FINANCIAL INDICATORS														
FF Target Range (Bottom-Top, %)^	5.25-5.5	4.25-4.5	3.5-3.75	3.5-3.75	3-3.25	3.5-3.75	3.5-3.75	3.5-3.75	3.5-3.75	3.5-3.75	3.5-3.75	3.25-3.5	3.25-3.5	3-3.25
10-Year Treasury Note^	3.88	4.58	4.18	4.40	4.25	4.18	4.30	4.44	4.45	4.40	4.35	4.30	4.25	4.25
Euro (€/€)^	1.11	1.04	1.17	1.12	1.14	1.17	1.15	1.14	1.14	1.12	1.12	1.12	1.13	1.14
Yen (\$/¥)^	141	157	157	164	145	157	159	163	162	164	164	165	157	145

* Weighted average of metro-level HPIs for 381 metro cities where the weights are dollar values of housing stock reported in the American Community Survey. Annual numbers are Q4/Q4.

** Annual inflation numbers are December year-on-year values. Quarterly values are Q4/Q4.

† PCE = Personal consumption expenditures. ^ Denotes end of period.

Note: Published figures in bold.

资料来源：高盛全球投资研究部



The US Economics Team

Jan Hatzius

+1(212)902-0394
jan.hatzius@gs.com
高盛集团

David Mericle

+1(212)357-2619
david.mericle@gs.com
高盛集团

Alec Phillips

+1(202)637-3746
alec.phillips@gs.com
高盛集团

Ronnie Walker

+1(917)343-4543
ronnie.walker@gs.com
高盛集团

Elsie Peng

+1(212)357-3137
elsie.peng@gs.com
高盛集团

Pierfrancesco Mei

+1(212)902-8809
pierfrancesco.mei@gs.com
高盛集团

Jessica Rindels

+1(972)368-1516
jessica.rindels@gs.com
高盛集团

信息披露附录

申明

我们，Pierfrancesco Mei、David Mericle，在此申明，本报告所表述的所有观点准确反映了我们的个人看法，没有受到公司业务或客户关系因素的影响。

本报告首页所列作者为高盛全球投资研究部分析师，除非另有说明。

贡献作者: Pierfrancesco Mei Goldman Sachs & Co. LLC、David Mericle Goldman Sachs & Co. LLC。

本报告披露的“贡献作者”为高盛全球投资研究部分析师，除非另有说明。

信息披露

法定披露

美国法定披露

任何本报告中研究企业所需的特定公司法定披露见上文：包括即将进行交易的承销商或副承销商，1%或其他股权，特定服务的补偿，客户关系种类，之前担任承销商或副承销商的公开发售，担任董事，担任股票做市及/或专家的角色。高盛担任或可能担任本报告中所涉及发行方的债券（或相关衍生品）的交易对手。

以下为额外要求的披露：股权及重大利益冲突：高盛的政策为禁止其分析师、分析师属下专业人员及其家庭成员持有分析师负责研究的任何公司的证券。分析师薪酬：分析师薪酬部分取决于高盛的盈利，其中包括投资银行的收入。分析师担任高级职员或董事：高盛的政策通常禁止其分析师、分析师属下人员及其家庭成员担任分析师负责研究的任何公司的高级职员、董事或顾问。非美国分析师：非美国分析师可能与高盛无关，因此可以不受FINRA 2241条FINRA 2242条对于与所研究公司的交流、公开露面及交易分析师所研究证券的限制。

美国以外司法管辖区规定的额外披露

以下为除了根据美国法律法规规定作出的上述信息披露之外其他司法管辖区法律所要求的披露。澳大利亚: Goldman Sachs Australia Pty Ltd及其相关机构不是澳大利亚经授权的存款机构（1959年《银行法》所定义），因此不在澳大利亚境内提供银行服务，也不经营银行业务。本研究报告或本报告的其他形式内容只可分发给根据澳大利亚公司法定义的“批发客户”，在事先获得高盛许可的情况下可以有例外。在撰写研究报告期间，Goldman Sachs Australia全球投资研究部的职员可能参与本研究报告中所讨论证券的发行公司或其他实体组织的现场调研或会议。在某些情况下，如果视具体情形Goldman Sachs Australia认为恰当或合理，此类调研或会议的成本可能部分或全部由该证券发行人承担。如本报告内容包含任何金融产品建议，则该建议仅为一般建议，且高盛提出该建议时并未考虑客户的目标、财务状况或需求。客户在就此类建议采取行动之前，应结合其自身目标、财务状况和需求来考虑该建议的适当性。高盛澳大利亚和新西兰的利益披露，以及高盛澳大利亚卖方研究独立性制度声明请参见<https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>。巴西: 与CVM Resolution n. 20相关的信息披露请参见<https://www.gs.com/worldwide/brazil/area/gir/index.html>。根据CVM Resolution n. 20第20条，在适用的情况下，对本研究报告内容负主要责任的巴西注册分析师为本报告开头部分标明的第一作者，除非报告末另有说明。加拿大: 这些信息仅供参考，在任何情况下都不应被理解为Goldman Sachs & Co. LLC对加拿大证券购买者进行有关任何加拿大证券交易的广告、要约或征求行为。Goldman Sachs & Co. LLC未在适用的加拿大证券法规下注册为任何加拿大司法管辖区内的交易商，通常不被允许交易加拿大证券，并且可能被禁止在加拿大某些司法管辖区内销售某些证券和产品。若您想在加拿大交易任何加拿大证券或其他产品，请联系 Goldman Sachs Canada Inc. (高盛集团的关联机构) 或其他已注册的加拿大交易商。香港: 可从高盛（亚洲）有限责任公司获取有关本报告中研究公司的证券的额外资料。印度: 可从高盛（印度）证券私人有限公司（分析师 - 印度证券交易委员会(SEBI) 编号 INH000001493，地址10th Floor, Ascent-Worli, Sudam Kalu Ahire Marg, Worli, Mumbai-400 025, India, 公司编号 U74140MH2006FTC160634, 电话 +91 22 6616 9000, 传真 +91 22 6616 9001）获取有关本报告中研究对象或所提及公司的额外资料。高盛可能持有本报告中研究对象或所提及公司的证券（1956年印度《证券合同(管理)法》条款2(h)之定义）的1%或更高比例。在SEBI注册并获得NISM认证并非对该中间机构表现的担保，亦不能对投资者回报做出保障。高盛（印度）证券私人有限公司合规负责人和投资者支持部门联系方式、年度合规审计报告副本以及其他相关信息和披露请点击此链接<https://www.goldmansachs.com/worldwide/india/research-analyst>。日本: 见下文。韩国: 除非高盛另行同意，本报告无论以何种方式取得，仅供《金融服务与资本市场法》定义的“专业投资者”使用。可从高盛（亚洲）有限责任公司首尔分公司获取有关本研究所研究公司的额外资料。新西兰: Goldman Sachs New Zealand Limited及其关联机构并非1989年新西兰储备银行法定义的“注册银行”或“存款机构”。本研究报告以及本报告的其他形式内容只可分发给2008年财务顾问法案定义的“批发客户”，在事先获得高盛许可的情况下可以有例外。高盛澳大利亚和新西兰的利益披露请参见<https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>。俄罗斯: 在俄罗斯联邦分发的研究报告并非俄罗斯法律所定义的公告，而是以产品推广为主要目的的信息和分析，也不属于俄罗斯法律所界定的评估行为。研究报告不构成俄罗斯法律定义的个性化投资建议，并非针对某个具体客户，在报告准备阶段也未分析客户的财务状况、投资特征或风险特征。高盛不对某个客户或任何其他人士基于本报告可能做出的任何投资决策承担责任。新加坡: 高盛（新加坡）私人公司（公司编号: 198602165W）（受新加坡金融管理局监管）为本研究报告承担法律责任，若有由本研究报告所引发或与本研究报告相关的任何事宜，请联系高盛（新加坡）私人公司。台湾: 本信息仅供参考，未经允许不得翻印。投资者应当谨慎考虑他们自身的投资风险，投资结果由投资者自行负责。英国: 在英国根据金融市场行为监管局的定义可被分类为私人客户的人士参阅本报告的同时应当参阅高盛以往对本报告研究企业的研究报告，并应当参考高盛国际已经发给这些客户的风险警告资料。该风险警告资料复本，以及本报告中采用部分金融辞汇的解释可向高盛国际索取。

欧盟和英国: 与欧盟委员会实施条例(EU) (2016/958) (欧盟议会和欧盟理事会条例(EU) No 596/2014的补充条款,规定了有关投资建议或其他投资策略的推荐或建议之信息的客观陈述,以及对特定利益或利益冲突进行披露的技术安排应达到的监管技术标准; 英国脱离欧盟和欧洲经济区之后该实施条例被纳入英国国内法律法规) 第6(2)条相关的披露信息可在<https://www.gs.com/disclosures/europeanpolicy.html>上获取, 该网址介绍在处理和投资研究有关的利益冲突时应参照的欧洲政策。

日本: 高盛证券株式会社是在关东财务局注册（注册号: No. 69）的金融工具交易商，同时也是日本证券业协会日本金融期货业协会、第二类金融工具公司协会、日本投资信托协会以及日本投资顾问协会的成员。股票买卖需要缴纳与客户事先约定的佣金及消费税。关于日本证券交易所、日本证券交易商协会或日本证券金融公司所要求的适用的信息披露，请参见与公司有关的法定披露部分。

全球产品；分发机构

高盛全球投资研究部在全球范围内为高盛的客户制作并分发研究产品。高盛分布在其全球各办事处的分析师提供行业和研究，以及宏观经济、货币、商品及投资组合策略的研究。本研究报告在澳大利亚由Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897) 分发；在巴西由Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.分发；Public Communication Channel Goldman Sachs Brazil: 0800 727 5764和/或 contatogoldmanbrasil@gs.com。工作日（假期除外）上午9点至下午6点。Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com。Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; 在加拿大由 Goldman Sachs & Co. LLC 分发；在香港由高盛（亚洲）有限责任公司分发；在印度由高盛（印度）证券私人有限公司分发；在日本由高盛证券株式会社分发；在韩国由高盛（亚洲）有限责任公司首尔分公司分发；在新西兰由Goldman Sachs New Zealand Limited 分发；在俄罗斯由高盛OOO 分发；在新加坡由高盛（新加坡）私人公司（公司号: 198602165W）分发；在美国由高盛集团分发。高盛国际已批准本研究报告在英国分发。

高盛国际（由审慎监管局授权并接受金融市场行为监管局和审慎监管局的监管）已批准本研究报告在英国分发。

欧洲经济区: Goldman Sachs Bank Europe SE是一家在德国注册成立的信贷机构，在单一监管机制下接受欧洲央行的直接审慎监督，在其他方面接受德国联邦金融监管局(Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin)和德国联邦银行的监督，由该机构向欧洲经济区内分发研究报告。

一般性披露

本研究报告仅供我们的客户使用。除了与高盛相关的披露，本研究报告是基于我们认为可靠的目前已公开的信息，但我们不保证该信息的准确性和完整性，客户也不应该依赖该信息是准确和完整的。报告中的信息、观点、估算和预测均截至报告的发表日，且可能在不事先通知的情况下进行调整。我们会适时地更新我们的研究，但各种规定可能会阻止我们这样做。除了一些定期出版的行业报告之外，绝大多数报告是在分析师认为适当的时候不定期地出版。

高盛是一家集投资银行、投资管理和证券经纪业务于一身的全球性综合服务公司。全球投资研究部所研究的大部分公司与我们保持着投资银行业务和其它业务关系。美国证券经纪交易商高盛是SIPC(<https://www.sipc.org>)的成员。

我们的销售人员、交易员和其它专业人员可能会向我们的客户及自营交易部提供与本研究报告中的观点截然相反的口头或书面市场评论或交易策略。我们的资产管理部、自营交易部和投资业务部可能会做出与本报告的提议或表达的意见不一致的投资决策。

我公司及其关联机构、高级职员、董事和雇员，除法规及高盛的制度所禁止的情况外，将不时地对本研究报告所涉及的证券或衍生工具持有多头或空头头寸，担任上述证券或衍生工具的交易对手，或买卖上述证券或衍生工具。

在高盛组织的会议上的第三方演讲嘉宾（包括高盛其它部门人员）的观点不一定反映全球投资研究部的观点，也并非高盛的正式观点。

在此提到的任何第三方，包括销售人员、交易员和其它专业人士或其家庭成员，可能持有本报告提及的且与本报告分析师所表达的观点不一致的产品头寸。

本报告重点关注整体市场、行业以及板块的投资主题，而无意区分任何我们所描述的行业或板块中具体公司的前景或表现、或对此进行分析。

本报告中与行业或板块内一只或多只股票或信贷证券相关的交易建议是对所讨论投资主题的反映，而并非对该证券的孤立的交易建议。

在任何要约出售股票或征求购买股票要约的行为为非法的司法管辖区内，本报告不构成该等出售要约或征求购买要约。本报告不构成个人投资建议，也没有考虑到个别客户特殊的投资目标、财务状况或需求。客户应考虑本报告中的任何意见或建议是否符合其特定状况，以及(若有必要)寻求专家的意见，包括税务意见。本报告中提及的投资价格和价值以及这些投资带来的收入可能会波动。过去的表现并不代表未来的表现，未来的回报也无法保证，投资者可能会损失本金。外汇汇率波动有可能对某些投资的价值或价格或来自这一投资的收入产生不良影响。

某些交易，包括牵涉期货、期权和其它衍生工具的交易，有很大的风险，因此并不适合所有投资者。投资者可以向高盛销售代表取得或通过<https://www.theocc.com/about/publications/character-risks.jsp>和https://www.goldmansachs.com/disclosures/cftc_fcm_disclosures取得当前期权和期货的披露文件。对于包含多重期权买卖的期权策略结构产品，例如，期权差价结构产品，其交易成本可能较高。与交易相关的文件将根据要求提供。

全球投资研究部提供的不同服务层级：根据您接收沟通信息的频率和方式的个人偏好、您的风险承受能力、投资重心和视角（例如整体市场、具体行业、长线、短线）、您与高盛的整体客户关系的规模和范围、以及法律法规限制等各种因素，高盛全球投资研究部向您提供的服务层级和类型可能与高盛提供给内部和其他外部客户的服务层级和类型有所不同。例如，某些客户可能要求在关于某个证券的研究报告发表之时收到通知，某些客户可能要求我们将内部客户网上提供的分析师基本面分析背后的某些具体数据通过数据流或其它途径以电子方式发送给他们。分析师基本面研究观点（如股票评级、目标价格或盈利预测大幅调整）的改变，在被纳入研究报告、并通过电子形式发表在内部客户网上或通过其它必要方式向有权接收此类研究报告的所有客户大范围发布之前，不得向任何客户透露。

所有研究报告均以电子出版物的形式刊登在我们的内部客户网上并向所有客户同步提供。并非所有研究内容都转发给我们的客户或者向第三方整合者提供，高盛也并不对由第三方整合者转发的我们研究报告承担任何责任。如需了解可向您提供的有关一个或多个证券、市场或资产类别的研究报告、模型或其它数据（包括相关服务），请联络您的高盛销售代表或登陆<https://research.gs.com>。

披露信息可以查阅<https://www.gs.com/research/hedge.html>或向研究合规部索取，地址是200 West Street, New York, NY 10282。

高盛版权所有 © 2026年

对于通过这些服务获取的信息，您仅可出于自行使用的目的进行保存、展示、分析、修改、重新排版和打印。未经高盛明确书面同意，您不得将这些信息转售或进行逆向处理从而用于计算或开发任何用于披露和/或营销的指数、或生成任何其他衍生产品或商业产品、数据或其他产品或服务。未经高盛明确书面同意，您不得以任何形式将这些信息的整体或部分向任何第三方发布、传输或复制。上述限制性要求的适用范围包括但不限于：使用、提取、下载或获取这些信息的整体或部分从而用于对机器学习或人工智能系统的训练或微调、或将这些信息的整体或部分提供或复制给任何此类系统作为提示词或输入信息。